

The Chaparral Supermarket: Native American Plant Uses

Teacher Packet

Program: A third through fifth grade program about native Kumeyaay Indians and the native plants they used.

Capacity: Thirty-five students. One adult per five students.

Time: One hour.

Park Theme to be Interpreted: The Kumeyaay used many native plants from coastal sage scrub habitat. The Bayside Trail is a fine example of this habitat, and will be used as the site for this program.

Objectives: At the completion of this program, students will be able to:

1. Describe two ways the Kumeyaay used plants to sustain their lives.
2. Identify three plants along the trail.
3. Define the following terms: native plants, exotic plants.
4. Recognize and list three plant adaptations for San Diego's climate.

History/Social Science Content Standards Grades K-12

Grade 3: 3.2 Students describe the American Indian nations in their local region long ago and in the recent past.

1. Describe national identities, religious beliefs, customs, and various folklore traditions.
2. Discuss the ways in which physical geography, including climate, influenced how the local Indian nations adapted to their natural environment (e.g., how they obtained food, clothing, tools)

Grade 4: 4.2 Students describe the social, political, cultural, and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods.

1. Discuss the major nations of California Indians, including their geographic distribution, economic activities, legends, and religious beliefs; and describe how they depended on, adapted to, and modified the physical environment by cultivation of land and use of sea resources.

Grade 5: 5.1 Students describe the major pre-Columbian settlements, including the cliff dwellers and pueblo people of the desert Southwest, the American Indians of the Pacific Northwest, the nomadic nations of the Great Plains, and the woodland peoples east of the Mississippi River.

1. Describe how geography and climate influenced the way various nations lived and adjusted to the natural environment, including locations of villages, the distinct structures that they built, and how they obtained food, clothing, tools, and utensils.
2. Describe their varied customs and folklore traditions.

Meeting Locations and Times:

9:45 a.m. – Meet at the planter in front of the administration building.

11:00 a.m. – Meet at the road leading down to the Bayside Trail. The ranger in charge will provide directions to the proper location.

Introduction:

A brief stroll along the Bayside Trail will reveal many of the native plants that inhabit Point Loma. Similar plants are found from Santa Barbara, California, south to Ensenada, Baja California. The native plant community of this area is loosely termed coastal sage scrub. It contains vegetation that is composed of annuals that provide seasonal color and ground cover, and perennials that are classed as shrubs. Coastal sage scrub plants seldom reach over 12 feet in height.

The characteristics that allow these plants to survive in the Southern California region are directly associated with the rainfall which is generally about 10 inches per year. Much of our rain occurs between January and March. In many areas, this amount of rain would indicate a desert-like environment. However, coastal breezes and moisture temper the harsh reality of limited rainfall. This added moisture promotes abundant plant life creating what is commonly called a Mediterranean climate. Other Mediterranean climates are found around the Mediterranean Sea, Chile, South Africa and southwestern Australia.

A variety of adaptations exist that make plant life possible. One survival characteristic is the plant's abilities to store moisture during the prolonged hot, dry months from May through the end of September. Some plants have tough, leathery, wax-covered leaves that encapsulate water within the plant. Other plants have minute white hairs that reflect sunlight, keeping leaf temperature down. Some leaves are so reduced in size and shape that they appear as spines. Not all plants can conserve water well, and simply drop their leaves during the summer months. Many plants have extensive, deep root systems that can exceed 30 feet and help hold the soil in place. These roots also reduce runoff during spring rains. Although many plants appear to be inactive during the summer, growth is still taking place. The most conspicuous plants of this community are perennials that live for many years.

Long before European settlement of Southern California, Native Americans, calling themselves Kumeyaay, lived throughout the county. The Kumeyaay built permanent villages. They also traveled to gather foods that were not locally available. During some of these gathering trips, they visited relatives living in other villages.

The plants, animals, water, soils and rocks all became valuable resources to the Kumeyaay. Specific plants were used as soaps, dyes, beverages and fumigants, while others were used for ceremonies and social events. The Kumeyaay knew the importance of fires to control unwanted plants and to promote growth of desired plants. After a fire, for example, many animals took advantage of the increased vegetation and wandering into the manufactured hunting areas of the villages. Thus these animals provided an easy, accessible source of protein.

Today we find remnants of the daily lives of the Kumeyaay throughout San Diego County. Ceremonial sites may be identified by the presence of pictographs and occasionally petroglyphs. Grinding sites, which are more common, were tremendously important in food preparation. Acorns would be ground into mush at the same grinding sites year after year, thus deepening the grinding holes and making them conspicuous to us today. The baskets and pottery that the Kumeyaay fashioned provided not only useful implements but became a way of artistic expression.

The Kumeyaay Supermarket, as a ranger-led experience, will afford the class an opportunity to identify plants that provided the Kumeyaay with some of the necessities of life: food, housing, clothing and medicine. The plants identified along the Bayside Trail are black sage, California sagebrush, lemonadeberry, prickly pear cactus, oak, yucca, California buckwheat, and non-native eucalyptus.

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Post-visit Activities

Kumeyaay and Language Arts

Below are two traditional Kumeyaay stories that have been translated. These stories were told for fun, as well as information. If you wish to read these stories to your students in the Kumeyaay language, they are found in Spirit Mountain: an anthology of Yuman story and song by L. Hinton and L. Watahomigie.

1. Read the stories aloud, or have your students read them.
2. Discuss and practice pronouncing the Kumeyaay vocabulary words below.
3. Creative writing assignment: imagine you are a Kumeyaay child living in San Diego 300 years ago and today is your birthday. Write a short story using at least 5 Kumeyaay words about what you do on your birthday to celebrate.

Kumeyaay vocabulary words:

The Kumeyaay people spoke a language that provided them with a means of communication. There are a few people today that still speak this language. Here are a few common Kumeyaay words.

Poway - *end of the valley*

hah - *yes*

how-ka - *hello*

hun-nah - *good*

k'yu' - *come*

mow - *no*

hup-chutl - *arrow straightener*

kur-kwur - *talk - talk*

n'yah'mah - *enough*

shah-weel - *acorn mush*

sSah-wil - *a winnowing basket*

Yuma - *the name of a desert tribe of people*

mi-h'tut - *milky way*

The Tar Baby Story
Alejandrina Murillo Melendres, Narrator
Transcribed by Leanne Hinton

There was an old man and an old woman,
They had some chickens.
A fox was robbing them a lot.
One night they made a trap and put it there --
Out of tar --
They made a doll and stood it up,
They stood it at the door, left it and went away.
When the fox arrived to eat the chickens, the doll was stationed there, when he arrived. "Get away from the door there, I'm going to enter and eat the chickens."
The doll did not talk.
"Get away, or I'll hit you and kill you!"
With one hand he hit it --
He got stuck---
"If you don't let go, I'm going to hit you with my other hand and kill you, let me alone!" He hit him with his other hand. He got stuck again.
Next, his feet--
"If you don't let go, I'm going to kick you with one foot and kill you!"
He kicked, and his foot got stuck.
He kicked with his other foot and it got stuck.
"Now I'll bite you and kill you if you don't let go!"
How could the doll let go?
He bit him with his teeth,
His teeth got stuck--
He was there until morning.
In the morning, the old man got up with the old lady.
They went to the chicken coop--
When they arrived, Fox was in the trap.
He was fallen. He was stuck.
"Ahh, here he is, the fox, here he is! The one who robbed our chickens!
Now we'll take him and tie him up and burn him!"
They took him and tied him,
They finished tying him.
While they went to get some wood,
A coyote arrived.
"What are you doing here, Fox?" he said.
And Fox:
"They tied me up and here I am. They went to bring me some good food to eat--
If you want, I can tie you up. I am very full. I cannot eat any more."
"Okay!"
He said, and he let him loose, he let Fox loose, and when he finished, Fox tied Coyote up the same way.

Then he went off, he fled. The old lady and the old man, when they arrived---
"Looooooooook! We'll throw him in the fire and burn him. This one robbed us and ate our chickens."

They made a fire and threw Coyote in it, as for Fox----
He was gone.

The Flute Player

Ted Couro, Narrator

Transcribed by Margaret Langdon

Once there was a man. He had a daughter. Their people lived in the valley.

One day, the girl heard something, she got up early in the morning and heard it. It sounded like a man playing that thing they call a flute.

She heard him play it, then she got up and went on her way. She climbed a mountain, she climbed a rock, then got off and came back to her home. She told her father: "I heard somebody, I heard him play, I ran but couldn't catch up. So I turned around and here I am."

Then in the morning, again she heard it. The whole day she heard the music, the playing the flute, she kept hearing it.

Finally one day she left, this girl went looking for him, determined to get him. She headed east, kept on going a long way. Finally one day she heard it, she heard the playing.

She had gotten there. There was a man sitting behind a rock, playing the flute. When the east wind blew on the flute the sound of it went west. That must have been what the girl had been hearing. She listened and then followed it.

When she reached him, she spoke to the man. But he didn't want to talk, he didn't want to look at the girl. She kept on talking to him, so then the man finally spoke: "I play the flute to find a Woman." Then the girl said, "Well, you've already got me now. I've come a long way. For three days I've come running. Now I've gotten here. I want to take you with me, that's why I came. When I take you, you'll meet my mother and father." Then the young man said: "I don't want to go. It's too far." She kept on talking and finally he went with her and followed her, they went until they got there, they reached her mother and father's house.

One day the young man sat looking at the water--there was a hole there with water in it. He kept looking at the water and jumped into it. He went inside the water, he lived inside the water and didn't come out.

The girl ran in to tell her father. The father went and wanted to get him out, but couldn't, had to leave him. He left him, and then in the morning he returned and came to look. The man was still there inside the water. They kept calling him, but he didn't come out. He stayed right there.

At last, then the girl went in too. She went in and now they live right there, they're married, they live together inside the water.

They're still there, so I came away.

Native Plants and Science

Create a learning center about the native plants your class learned on your Bayside Trail walk.

1. Fill Ziploc bags with leaves, berries, spines and twigs from the native plants your class learned on the field trip.
2. Attach the bags to a bulletin board or free-standing board (i.e. a tri-fold presentation poster board).
3. Next to each bag, attach flip-up note cards with questions on the front and answers on the back. Some sample questions:
 - a. What is the name of this plant?
 - b. How did the Kumeyaay use this plant?
 - c. Is this plant an annual or a perennial?
4. Encourage your students to touch, smell and look carefully at the plants as they try to remember the answers, before turning the cards over and reading the answers.

Art and Writing

Create a creature project. Have your students take the following steps:

1. Draw and color, or paint a picture of a new creature that lives in Coastal Sage Scrub.
2. Using a comic strip format, draw and show what your creature eats and how it moves around.
3. Write a short story about your creature's name, where it sleeps and how long it lives.

Science

Native versus non-native plant experiment about dessication.

1. Purchase a few small native plants (shrubs or cacti) from a native plant nursery, and a few small non-native/exotic plants from anywhere (grocery store, hardware store, nursery).
2. Explain to your class that they will perform an experiment to test which plants will live longer without water, the native plants that are adapted to little water, or the non-native plants that need sustained water.
3. Put the plants in a sunny spot or under a lamp.
4. Water the plants so they start the experiment with the same amount of resources.'
5. Make hypotheses about which plants will survive longer with no water.
6. Create a chart in the classroom that you can use to record the number of days each plant stays alive and observations of the plants each day.
7. When a few of the plants look dead, or close to death, stop the experiment and discuss which plants stayed alive longer (hopefully the native plants!) and why.
8. Discuss what adaptations native plants have for living in San Diego where there is little rain each year.
 - a. Adaptation = a feature that is prevalent in a population because it has the advantage of improving some function.
 - b. Adaptation example: leaves on lemonadeberry are coated with a waxy substance to keep them from drying out.

Native versus non-native experiment about too much water.

1. In contrast to the previous experiment, this will focus on how too much water is harmful

- to native plants.
2. As above, have a few native and non-native plants available for this experiment.
3. Give each plant the same amount of water appropriate to moisten the soil on Day 1.
4. Hypothesize about what will happen to the native and non-native plants when you give them constant water for a long time, since they are not adapted to taking in so much water.
5. Water the plants every other day for a few weeks, or shorter if you see results sooner.
6. Create a chart to track the amount of water given to each plant and any observations of the plants.
7. Discuss the results (hopefully the native plants will begin to die from over-watering!) and why they occurred.

Use the above two experiments to start a discussion on why we water our lawns and gardens. If we all had yards full of native plants, no one would have to waste water on grass or other non-native plants. Discuss why this is good for our environment, but not always practical (imagine trying to play your soccer game through Coastal Sage Scrub!). Following are local native plant nurseries for resources and questions:

Las Pilitas Nursery, Escondido, (760) 749-5930, www.laspilitas.com

Walter Anderson's Nursery, San Diego, (619) 224-8271

Coastal Sage Gardening, Ocean Beach, (619) 223-5229

Quail Botanical Gardens, Encinitas, (760) 436-9466

Math

Use the word problems that are suitable for the grade level of your students, or change them as needed.

1. Many years ago, there were as many as 25,000 Kumeyaay people living in California. Subtract 21,500 people to find out how many Kumeyaay people there are today.
2. The Kumeyaay played a game called Peone using eight peone-sticks made of sheep bone or coyote bone. One half of the sticks were white and one half of the sticks were black. How many sticks were white, and how many sticks were black?
3. How many Kumeyaay Indian reservations are in San Diego County? Take the number 70 and divide it by 5 to find the answer.
4. If you need to pick 15 berries from the lemonadeberry plant to make your favorite drink by crushing the berries and mixing them with water, how many berries do you need to pick to make your favorite drink for your three friends?
5. How many feet tall does California sagebrush grow? Multiply 8 times 0.5 to find the answer.
6. Bees love to visit California buckwheat flowers when they bloom. If it takes 5 minutes for a bee to visit 4 flowers, how many flowers can a bee visit in 30 minutes?
7. The spines on a prickly pear cactus are very sharp! If each prickly pear leaf has 50 spines, how many spines are on a cactus with 10 leaves?
8. The pale blue or white flowers on the black sage plant bloom in April, May and June. There are twelve months in a year, so how many months each year are the black sage flowers not blooming?